

## CLAIMS

### We Claim:

- 1           1. An optical switch, comprising:  
2           a first waveguide;  
3           sidewalls that form a trench, a first sidewall of the sidewalls including a  
4 mirror wall at a location where the first sidewall impinges the first waveguide;  
5           a second waveguide, the second waveguide being position so that light  
6 from the first waveguide reflected by the mirror wall proceeds into the second  
7 waveguide; and,  
8           a heating system that forms a bubble within the trench, wherein volume  
9 of the bubble is substantially less than total volume of the trench, so that  
10 pressure within the bubble is not substantially increased by pressure exerted by  
11 sidewalls of the trench.
- 1           2. An optical switch as in claim 1 wherein the trench is longer than the  
2 bubble.
- 1           3. An optical switch as in claim 1 wherein the trench is deeper than the  
2 bubble.
- 1           4. An optical switch as in claim 1 wherein the heating system includes:  
2 a heater; and,  
3 a pillar that extends from the heater up the first sidewall.

1           5. An optical switch as in claim 1 wherein the heating system includes:  
2           a first heater;  
3           a first pillar that extends from the first heater up a first sidewall;  
4           a second heater; and,  
5           a first pillar that extends from the second heater up a second sidewall of  
6           the sidewalls.

1           6. An optical switch, comprising:  
2           sidewall means for forming a trench;  
3           first waveguide means for directing light towards the trench;  
4           second waveguide means for receiving the light after the light is reflected  
5           from the trench; and,  
6           heating means for heating the trench so that a bubble is formed in the  
7           trench, wherein volume of the bubble is substantially less than total volume of  
8           the trench, so that pressure within the bubble is not substantially increased by  
9           pressure exerted by the sidewall means.

1           7. An optical switch as in claim 6 wherein the trench is substantially  
2           longer than the bubble.

1           8. An optical switch as in claim 6 wherein the trench is deeper than the  
2           bubble.

1           9. An optical switch as in claim 6 wherein the heating means includes:  
2           a heater; and,  
3           a pillar that extends from the heater along the trench.

1           10. An optical switch as in claim 6 wherein the heating system includes:  
2           a first heater;  
3           a first pillar that extends from the first heater up a first side of the trench;  
4           a second heater; and,  
5           a first pillar that extends from the second heater up a second side of the  
6           trench.

1           11. A method for operating an optical switch, comprising:  
2           filling a trench with index matching fluid so that light from a first  
3           waveguide passes through the trench to a second waveguide; and,  
4           forming a bubble within the index matching fluid so that light from the  
5           first waveguide is reflected at the trench to a third waveguide; wherein the  
6           bubble is formed by heat so that volume of the bubble is substantially less than  
7           total volume of the trench, resulting in pressure within the bubble not being  
8           substantially increased by pressure exerted by sidewalls of the trench.

1           12. A method switch as in claim 11 wherein the trench is longer than the  
2           bubble.

1           13. A method as in claim 11 wherein the trench is deeper than the bubble.

1           14. A method as in claim 11 wherein forming the bubble includes  
2           using a heater to produce the heat; and,  
3           using a pillar to spread the heat over one side of the trench.

1           15. A method as in claim 11 wherein forming the bubble includes  
2           using a first heater to produce heat at a first sidewall of the trench;  
3           using a first pillar to spread the heat over the first sidewall of the trench;  
4           using a second heater to produce heat on a second sidewall of the trench;  
5           and,  
6           using a second pillar to spread the heat over the second sidewall of the  
7           trench.